

ED

Notice of Allowability

Application No.

10/688,148

Examiner

Meagan Thomasson

Applicant(s)

GELB ET AL.

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3714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 7/2/07.
2. ☒ The allowed claim(s) is/are 1,2,4-15,17-20,37,38.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| <ol style="list-style-type: none"> 1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>7/20/07</u> 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
|--|---|


XUAN M. THAI

SUPERVISORY PATENT EXAMINER

TC3700

Terminal Disclaimer

The terminal disclaimer filed on July 2, 2007 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of U.S. Patent Number 6,853,398 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Response to Amendment

Applicant's arguments, see Remarks, filed July 2, 2007 with respect to claims 1-38 have been fully considered and are persuasive. The obviousness-type double patenting of rejection of claims 1-38 has been withdrawn in response to the Terminal Disclaimer obviating the double patenting rejection.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Joel Youngs on July 20, 2007.

In the CLAIMS:

Cancellation of Claims: **Cancel claims 21-28,30-36.**

REASONS FOR ALLOWANCE

Claims 1,2,4-15,17-20,37 and 38 are allowed.

The following is an examiner's statement of reasons for allowance:

Independent claim 1 discloses a method of real-time rendering in a gaming environment to create an interactive experience comprising capturing a plurality of real-time video streams of a local participant from a plurality of camera viewpoints; generating real-time renderings of said local participant based on said plurality of real-time video streams by applying a new view synthesis technique, said real-time renderings taken from a perspective of a remote participant located remotely in said gaming environment, wherein said new view synthesis technique comprises an image-based visual hull technique that comprises approximating a visual hull of said local participant by projecting contours associated with said local participant into three-dimensional space and computing an intersection of resulting frusta; and sending said real-time renderings to said remote participant for viewing within said gaming environment.

This is patentable over the prior art as the prior art does not disclose the method as claimed. Specifically, in the invention disclosed by Eilat et al. (US 6,227,974), a single picture of a local player is taken and mapped to a pre-existing avatar for use in a three-dimensional gaming environment that may be viewed by a remote player. Thus, while an avatar featuring the player's face is utilized, there is no disclosure of a plurality of real time video streams wherein a real-time rendering of a local participant is created by applying a new view synthesis technique comprising an image-based visual hull of

said local participant. There is no suggestion or motivation to modify Eilat et al. such that claim 1 of the instant application would be an obvious variation of the invention disclosed by Eilat et al., as the new view synthesis technique comprising estimating an image-based visual hull requires the simultaneous presence of multiple viewpoints.

In the invention disclosed by Oh (US 5,616,078), a video game system monitors movements made by a player during a gaming session and displays said movements in a virtual environment. However, this is accomplished using sensors attached to the player's body at various locations, not by capturing a plurality of real-time video streams from a plurality of camera viewpoints and applying a new view synthesis technique comprising an image based visual hull.

In the invention disclosed by Kage (US 6,335,977 B1), multiple cameras are utilized to monitor the movements of a participant and reproduce said movements using computer graphics. However, Kage does not disclose utilizing an image-based visual hull technique that comprises approximating a visual hull of said participant by projecting contours associated with said local participant into three-dimensional space and computing an intersection of resulting frusta, nor does Kage disclose generating real-time renderings taken from a perspective of a remote participant and sending said real-time renderings to said remote participant for viewing within a gaming environment.

In the disclosure of "The Visual Hull Concept for Silhouette-Based Image Understanding" by Aldo Laurentini (IEEE Transactions on Pattern Analysis and Machine Intelligence 1994), herein referred to as Laurentini, Laurentini discloses an image-based visual hull technique that comprises approximating a visual hull of an object by

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projecting contours associated with said object into three-dimensional space and computing an intersection of resulting frusta. However, Laurentini provides no disclosure of generating real-time renderings of a participating game player based on a plurality of real-time video streams, wherein said real-time renderings are taken from a perspective of a remote participant located remotely in a gaming environment.

Thus, while it is well known in the art to apply a still image of a player to a character in a gaming environment in order to make said character resemble said player, there appears to be no teaching of the limitations of the method as disclosed in claim 1.

Claim 11 contains limitations similar to those of claim 1, and is therefore also allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Pertinent Prior Art

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Pertinent prior art includes:

- Eilat et al. (US 6,227,974 B1), drawn to an interactive gaming system wherein a picture of the player is incorporated into a virtual gaming environment.

- Breslow et al. (US 4,710,873), drawn to a video game incorporating digitized images of a player into game graphics.
- Oh (US 5,616,078), drawn to a video game system wherein a player's movements are tracked and displayed utilizing motion detecting sensors.
- Yoshigahara et al. (US 6,476,812 B1), drawn to a method for detecting a collision between a space and an object comprising a plurality of cameras and a process determining section for creating a three-dimensional image of an object colliding against a virtual space.
- Cok (US 6,980,333 B2), drawn to a motion imaging system for generating a real-time motion image sequence of an environment and integrating a motion image sequence of the viewer into the computer generated motion image sequence of the environment to produce a composite image.
- Oishi et al. (US 6,890,262 B2), drawn to a video game apparatus for controlling viewpoint movement of a simulated camera in a video game.
- Ohshima et al. (US 6,522,312 B2), drawn to an apparatus for presenting mixed reality shared among operators.
- Berg et al. (US 7,048,630 B2), drawn to a system and method for capturing a player's image for incorporation into a game.
- Marks (US 6,795,068 B1), drawn to a prop input device and method for mapping an object from a two-dimensional camera image to a three-dimensional space for controlling action in a game.

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- Smooth et al. (US 2004/0102247 A1), drawn to a surface-based interactive environment utilizing an infrared light source for capturing participant motion.
- Kanarat (US 2003/0130035 A1), drawn to an amusement machine for capturing a participant image and comparing said image to a pre-stored image.
- Yamade et al. (US 6,970,177 B2), drawn to an image processing system for capturing a player image and incorporating said image into a game.
- Swamo et al. (US 6,677,967 B2), drawn to a video game system for capturing images and applying the captured images to animated game play characters.
- Erdem (US 6,664,956 B1), drawn to a method for generating a personalized 3-D face model.
- Liu et al. (US 6,807,290 B2), drawn to a rapid computer modeling method of faces for animation.
- Marschner et al. (US 7,098,920 B2), drawn to a method and system for animating facial features and expression transformation.
- Waupotitsch et al. (US 7,016,824 B2), drawn to an interactive try-on platform wherein a user's three-dimensional image is generated from a series of still images.
- Fujiwara et al. (US 6,977,660 B2), drawn to a data processing apparatus for a three-dimensional image processing technique of generating a texture image from an original three-dimensional model.
- Kang (US 6,009,210), drawn to a hands-free interface to a virtual reality environment using head tracking.

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- Erdem (US 7,127,081 B1), drawn to a method for tracking motion of a face and generating a three-dimensional model of said face.
- Paul et al. (US 7,121,946 B2), drawn to a real-time head tracking system for computer games and other applications.
- Kage (US 6,335,977 B1), drawn to an action recognizing apparatus and recording medium.
- Malzbender (US7,057,662), drawn to an apparatus featuring a plurality of cameras.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Meagan Thomasson whose telephone number is (571) 272-2080. The examiner can normally be reached on M-F 830-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xuan Thai can be reached on (571) 272-7147. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Meagan Thomasson
July 20, 2007



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SUPERVISORY PATENT EXAMINER

TC3700